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## SUPERINTENDENTS' DAY

### DISCUSSION OF PRIVATE FIRE SERVICES

MR. WIRT J. WILLS: In starting on this very important subject, which has been nearer and dearer to the speaker than any other for about six or seven years, he just wants to emphasize what our secretary has said: "This is a question that is bothering most of us, let us try at this convention to 'get somewhere' with it. Let each one tell his experiences and methods, and then select the best of these, and from them try to make up a standard."

That is what the speaker wants to emphasize to all of the members, let us do something today. Some of you will remember arguing on this line in Minneapolis when our worthy President Mr. Gwinn reminded the speaker of the fact that the American Water Works Association had passed a resolution to make a charge according to the rules and regulations for fire protection. Now that was in 1906 or 1908, and here it is eight years since then, and we are no nearer to getting together on the subject than we were before. So before going into this subject are there not some persons here who are not vitally interested because they have solved the question who would help some of the rest of us to get somewhere today. Let us do something and try to get somewhere.

MR. LYMAN P. HAPGOOD: Having been through this same proposition, we feel that our troubles are all over now. We furnish fire protection to the city of Jamestown which seems to be ample; that is "ample" because it is accepted by underwriters as being satisfactory. We furnish fire protection to the public at large at no expense to the public beyond a nominal charge of \$12,000 a year, which charge includes hydrant rentals and all municipal use of water. There are between five and six hundred hydrants in the city.

Now if we have done all that and in a satisfactory manner, we see no reason at all why Tom, Dick or Harry should want added fire protection to benefit themselves financially. That is to say, if anybody puts in sprinklers he gets a reduction in his insurance, and if he wants special fire protection he certainly should pay for that special privilege. We do not charge him anything for the water he uses to

put out fires, but we do charge him for the connection from the main, including the meter. We furnish the water free. We furnish the service pipe to the curb free for all other uses; but having furnished ample fire protection we say that if he wants added fire protection he must pay for it; that is, he must pay for the installation of his pipe and his meter, and we will furnish the water to put out his fires. This plan has been in operation in Jamestown now for two years. The first year and a half it was somewhat difficult to get the thing through, because the factory owner or the property owner felt that we were imposing upon him; but we got it started, and we have over 20 detector meters on. We are having no trouble about putting them in now, everybody seems to be satisfied; and it seems that is the only way to do. There should be no absolutely free service.

MR. HARRY F. HUY: The question of proper compensation for fire service in the territory of which the speaker has charge has been very thoroughly considered, due to the fact that we supply water to very large industrial consumers.

In the first place, the water company considers it is proper that it should not make the consumer pay for the meter or own the meter; but that the water company should own and keep the meter in repair; and be responsible for the meter itself; so that it will have the exclusive right to go into the premises at any time and make repairs, test, adjust or replace the meter without consulting or negotiating with the owner.

The water company should be allowed to make a service charge commensurate with the amount and character of the service rendered. The practice of the company is to make a service charge for each hydrant and an additional charge for any water that is used in connection with the hydrant. This protects the water company against improper use of the fixtures. We have found, in a number of cases, where we had a fire hydrant, whether it was sealed or not, someone opened it and used the water for other purposes. Upon taking the matter up with the consumer apologies were forthcoming but unfortunately the revenue was lost to the water company.

Is not the logical way of handling fire protection service to make a service charge, depending upon the amount of fire protection, taking into account the number of hydrants and sprinkler heads installed; the water company to furnish the meter and the pipe in

public streets, the consumer to pay for all pipe on private property; and if any water is used on the service, payment for all water registered by the meter to be made by the consumer at the uniform schedule of rates?

MR. ALBERT BLAUVELT: Presumably the bringing up of these questions is with the thought of getting at a sort of recapitulation of present day thought.

Some water works men seem to look upon insurance interests as an indivisible sort of a unit, and that any particular trouble with one insurance unit applies to all the rest of them, but as a matter of fact, the business of fire insurance is considerably bigger than the United States post office, and unlike the post office is divided into a great many divergent groups which have no commercial affiliation whatever.

As to anything responsible on paper as representing the insurance standpoint on this subject there is almost nothing. All that you can get out of insurance men is individual opinions. Now taking the question as to whether a private fire service is one of the proper functions of a water works, the same as the public hydrants, or a valuable and special service tendered to a certain citizen, a service that should be paid for by the one receiving the benefit; that is a legal question in some cases, but not in most cases. There are not very many corporation charters, or very many city charters which cover that point so that you can get legal rules; and in the absence of any legal definition it seems that for service that comes inside of a private property, that private property must be held responsible and must pay for it, whether the corporation be in the form of an incorporated water works or a city incorporation, the water works being one of its branches. Now, if that view be correct, it answers the question, that the private property benefited should pay the entire cost of installing and maintaining such service.

There has been considerable discussion as to whether pressure service is a good and valuable service where no water is consumed. The speaker is very emphatically of the opinion that pressure service with no consumption is a good and valuable service. If not, why do the parties want it?

As to whether this service should be confined to factories or extended to commercial houses or even residences if desired, it seems that for a private service the character of occupancy of the property

does not make any particular difference, for the property is responsible in any event.

The general installation of such services would make special provision for their care by the water works necessary; because of the necessity of inspection of all pipes, even if installed on private property; and that inspection necessarily requires supervision, which might become a considerable job, if there were a number of private services.

As to the size of service allowed and its proportion to size of mains; the printed rules for the installation of automatic sprinkler systems, state that the connection for automatic sprinklers should not be less than 4 inches. There has been quite a good deal of getting together on that point; and while there is more or less of a demand for connections larger than 4 inches, yet a good many water works have said that they would allow 4 inches, but nothing larger; and that is now the rule of practice in some very important cities. At the present time there seems to be quite a fair consensus of opinion on the part of important water works in limiting the size to 4 inches, thereby meeting the expression in the sprinkler rules asking for connections not smaller than 4 inches. The question as to whether more than one 4-inch connection should be granted is rather an open question as yet. Some water works, in fact most of them, grant more than one 4-inch connection on important properties, particularly if that connection can be taken from two streets, or at least at some considerable remove of each connection from the other.

As to the reasonableness of the demands of the insurance people for large fire services and whether it is good water works practice to allow them; the demands of the insurance people are very largely local. There are only two general rules that have any responsible backing in insurance circles, the one expression being with regard to the 4-inch connection, and the other, which is shown in your *Proceedings* at West Baden, as to the matter of private fire services, where it was the sense both of the American Water Works Association and the Fire Protection Association that meters on private fire services should be provided with special relief valves to take not more than 6 per cent of the pressure, which valves would open up in case of need for a heavy fire flow; no expression whatever being made on the subject of the meter itself.

The speaker would dwell a little further on the subject of the demands of fire insurance people, because it has unfortunately made

some bad blood in some cases. There is no reason why our insurance offices cannot be careful of the good of this association as well as that of any association of fire insurance engineers. The fact remains, however, that insurance is divided among different commercial interests, and some of these commercial interests are split up into local divisions, each of which may not have very much knowledge of what the other is doing; and they are also governed more or less by local conditions.

An insurance company in the actual writing of its policies has a choice of four courses; the sprinkler equipment or fire protection apparatus may be used just as they want it, and rated accordingly; or it may be they do not want it, and again it is rated accordingly; it is merely a matter of price; or the policy form may be so drafted as to disclaim responsibility, in the event of fire, for anything that goes wrong with the special fire protection connection; or the company may say nothing at all on the subject, and rely on evidence to be used in case of a subrogation suit if that be necessary in the event of anything going wrong. Now it is a practical impossibility for a water works to know which of these four courses an insurance company in the writing of its policy may take.

As to the control of large private fire services in the cities. This subject is very vague, and there does not seem to be anything very satisfactory as to it. The same thing applies to the proper distance of shutoff from building supplied. Nothing has been reduced to practice and there seems to be no near prospect of it. With regard to inspections and method of making them, that is a matter for each water department to determine for itself; but unquestionably it should have the right of full access to the premises.

Speaking of joint connections to other sources of supply, fire pumps sometimes draw from polluted streams. There is then no question of the danger of putting on fire pump pressure for test purposes or other purposes against ordinary check valves. You gentlemen have been very conscientious in your endeavors to support boards of health in matters of this kind, and you are entirely correct in your demands for soft seated check valves with an indicator cock in between, and regular tests. They are not too much to ask.

As to metering private fire services and danger of interrupted service by reason of having meters on such services, that is very thoroughly covered by the *Proceedings of the New England Water Works Association*, to the effect that meters that have any mechanism what-

ever that will obstruct the free flow are objectionable, for which reason the American Water Works Association and the National Fire Protection Association agreed on the wisdom of having a relief check safety valve, to be used in parallel with the meter.

As to the type of the meter itself, or so far as the meter proper is concerned, the fire protection interests can confine themselves entirely to the question of the efficiency of the safety valve feature. Some of the appliances and safeguards now on the market are satisfactory; others are not. Most of the principal insurance inspection offices on sprinklered risks feel that the amount of water that is stolen is quite easily regulated by seals and inspection. Where fire protection pipes are used for fire protection only and no consumption of water is normally intended, the seals and inspection should be sufficient. Where the same pipes must serve for both domestic use and fire protection, a strong effort should be made to have the domestic service put off by itself and separately metered.

With reference to the charge for fire services, unquestionably there should be a charge. As a matter of practice a charge of \$50 a year for a 4-inch connection seems to be a charge that a water works can collect; they seem to be able to get the money. When they go over \$50 for a 4-inch connection the objection and resistance seem to run up pretty sharply and the difficulty of the collection increases.

MR. WIRT J. WILLS: You said that a 4-inch connection was satisfactory to most insurance engineers.

MR. ALBERT BLAUVELT: Yes.

MR. WIRT J. WILLS: This matter was settled in Memphis two or three years ago; but some citizens are writing all over the country trying to ascertain what charges are being made. An application was made for an 8-inch connection from an 8-inch main for premises already having a 6-inch service. Can that be called right and reasonable?

MR. ALBERT BLAUVELT: Do you want to know if you were right? Yes, sir.

MR. WIRT J. WILLS: As to the charge you said just now that a charge of \$50 per annum had proven satisfactory for a 4-inch connection.

MR. ALBERT BLAUVELT: They usually manage to get the money.

MR. WIRT J. WILLS: Do you not think that a charge of \$36 for six hundred sprinklers or less on a 4-inch connection is reasonable or equitable, including all inspections?

MR. ALBERT BLAUVELT: The speaker declines to give any opinion on the equity of that charge. You can usually collect \$36 easier than you can \$50.

MR. WIRT J. WILLS: You said just now that \$50 was collectable.

MR. ALBERT BLAUVELT: No, nothing about collecting it, but that they could get \$50.

MR. WIRT J. WILLS: Anyway, you agree that for a 4-inch connection furnished by a private company there should be some charge made when the inspection is made and the sealing kept up?

MR. ALBERT BLAUVELT: Absolutely. Consult your *Proceedings* where you will find the speaker has said the same thing for years.

MR. H. P. BOHMANN: In a consideration of the question, is a private fire service one of the proper functions of a water works, the same as the public hydrants, or a valuable and special service rendered to a certain citizen, a service that should be paid for by the one receiving the benefit, the fact must not be lost sight of that the function of a municipality is to provide means for the protection of the health, life and property of its citizens, and in the establishment of these means to provide for an equitable and just administration of the same for the welfare of the entire community.

In the provision of protection against fire loss, we find municipalities constructing and maintaining systems of water service, connecting therewith fire hydrants and fire cisterns, placing them with special regard to the particular fire risks of the city, organizing and maintaining elaborate fire alarm systems and fire departments, open-



ing and improving roads for ease and rapidity of access by the fire department to the various parts of the city, and enacting legislation relative to the proper construction of buildings and their equipment with respect to fire protection. The expense of all these improvements is borne by the community at large for the special benefit of the community as a whole rather than that of the private individual. Having thus provided this system of general protection to life and property, and having provided means whereby additional and special service may be obtained by the individual, the obligation of the community ends.

Of late years, there has arisen a demand on the part of individuals for more elaborate systems of protection in the form of private fire mains and hydrants, hose stand pipes, and automatic sprinkler systems; and in support of an argument for the installation of these systems, or at least part thereof, by the water works or the municipality, the claim is made that this additional protection against fire loss is a direct benefit to the community in the operation of its fire department, and reduction in the damage by water in fires as against those without such protection; and that the loss of employment of the citizens in the particular industry thus protected is greatly reduced. While it must be admitted that in part these claims are reasonable, a very important fact must not be overlooked that the one principal reason for the installation of these private fire systems is that of a mercenary character. It is a well known fact that the insurance rates are based upon the character of the industry; the condition of the buildings; the proximity to public fire hydrants; the general protection offered by the city, relative to water service, fire department efficiency, and the conditions of access along public thoroughfares; and that additional private service means a reduction in rates commensurate with the extent of such private service. In fact, we find that the installation of a modern sprinkler system, costly though it is, is reputed to pay for itself in a few years in the reduction of the insurance rates. Thus while such installations not only benefit the community in some respects, a more striking and immediate benefit is derived by the owner of the premises in the financial saving of rates, and in the freedom from interruption of business by the installations of systems to check incipient fires.

In view, therefore, of the fact that the municipality has provided a general system of fire protection as above stated, and as this additional system is the next to perfection for the personal convenience

and gain of the individual, there seems to be no legitimate reason why it should be considered a proper function of a water works or a municipality to furnish and maintain these private systems.

Inasmuch as it is a very proper function of a city to regulate the construction of a building, with a view of conserving the health and lives of the occupants thereof, it follows that it is a natural function of a municipality to further require appliances in these buildings which may check disasters through fire or other causes. We find in the building clauses of various cities provisions for fire escapes, ample passageways, outward swinging doors, fire check doors and fire walls, for the rapid exit of the occupants in the event of a conflagration, or to prevent the spread of fire from a nearby building to one thus equipped; yet we fail to note any clause for fire prevention by extinguishing an incipient blaze, thus preventing loss of life by panic, as occasioned many times by the presence of smoke or evidence of fire which could and should have been checked in its incipency.

It should not, therefore, require any great stretch of imagination to see the benefits derived from a compulsory installation of special fire protection along the lines of an automatic sprinkler system, not only to the community at large but to the individual in particular, and it should be the duty of the community to insist upon the installation of some class of automatic fire service in all factories, theatres, hotels, halls, and commercial buildings, with possibly some restrictions as to the latter, and that the compulsory installation of such service by the city carry with it some provision for the supervision of these services, not only for their proper installation, but for their maintenance.

Municipalities should make a careful study of the conditions of the buildings, and grant permission for the connection with the mains of services large enough to meet the demands of the building, yet not so large as to be a menace to the general supply of the district. Insurance companies are very insistent on the installation of mains of such size as to almost carry the peak load of the entire system. It seems to be an arbitrary rule on their part, judging from some installations which have come under observation, to accept a standard of fire protection somewhat below the average of American cities.

Inasmuch as the purpose of an automatic sprinkler system is to prevent the spread of fire by checking the incipient blaze, it seems

plausible that a very large stream of water is not necessary for this purpose, and that with the pressure at the city mains of from 40 to 50 pounds, for installation of 250 to 300 sprinkler heads, a 4-inch main from the street would be of ample size. Larger installations should not require a main of greater diameter than 6 inch, or, in a very extensive installation, two 6-inch connections to the mains at different points.

These fire services should be under the control of the municipality by the installation of a gate valve enclosed in a gate valve box at the main in the street. It would seem that this plan of control of a fire main is much better than the placing of an indicator post valve inside the curb line, where it may be subject to damage by carelessness in traffic operations, or to being covered by the falling walls of a building. Inasmuch as the line of the street main is generally 10 to 15 feet or more distant from the curb, danger of covering the gate boxes by falling walls is very remote.

For the control of the branch lines in the building, if outside control is desirable, the distance of the shut-off from the building should not be less than 12 to 20 feet, or as a general rule, approximately one-third the height of the building.

These private fire supplies should be entirely separate and distinct from any building service line. No connections whatever for the domestic supply of the premises should be allowed. This is a very important consideration, especially so in the event of a city having small mains and comparatively low pressure, for the reason that if joint building connections were allowed, the consumption for domestic purposes would materially lower the pressure and service for the automatic fire line, to such an extent perhaps as to impair the efficiency of the latter considerably; and for the purpose of inspection and test of the fire line, the constant use of water for the domestic service would prevent the knowledge of the true condition of the fire service.

MR. GORHAM DANA:<sup>1</sup> The speaker would like permission from the chair to enter into a discussion of the general proposition, because it seems that these questions are all very closely allied, and it is pretty hard to limit one's self to one particular phase of it.

To begin with, to disagree with Mr. Blauvelt on some of the points which he brought up, insurance companies are pretty well agreed

<sup>1</sup>Manager, Underwriters' Bureau, Boston, Mass.

as to what they want in the way of fire service connections. Rules for automatic sprinkler service have been developed after forty years' experience. The present rules have been in print for about ten years. The rules for pipe sizes have not been modified materially for over ten years and are the result of long experience and numerous tests made in the field as to the amount of water which flows through sprinkler systems. The present schedule of pipe sizes is likely to remain as it is for many years. All who are familiar at all with the automatic sprinkler proposition know that the size of pipe to feed an equipment depends upon the number of sprinklers on a floor; it does not make any difference how many stories high the building is. The theory of automatic sprinkler protection is that a fire must be put out on the floor in which it starts. The fire is not likely to spread from floor to floor, because the stairways and elevators and all other openings are supposed to be enclosed to prevent the spread of fire. The size of the riser to feed the sprinklers is exactly the same in a ten story as in a two story building, provided the floor area is the same. Therefore it seems that the proposition of charging per sprinkler head is not correct, because the total number of sprinkler heads does not fix the size of the pipe. Now the rules for automatic sprinklers are well recognized throughout the country and agreed on by practically all insurance interests.

The National Fire Protection Association has been in existence for twenty years. That association was started primarily to codify the sprinkler rules so as to make them uniform in different parts of the country. That was its first proposition. Since then of course it has taken up a great many other subjects; but that was the primary reason why that Association was started. The rules have been slightly modified since, but in the main they are the same. They are agreed to by practically all insurance interests. That being the case it is hardly fair to say that there is very much divergence of opinion among insurance people as to what is wanted in regard to fire protection connections, because the rule is that a certain number of sprinklers on a floor requires a certain size of pipe to feed them. The limit of the 4-inch pipe is eighty sprinkler heads on a floor; but as probably most of you know, one sprinkler head covers on an average 80 square feet to 100 square feet, dependent upon the construction. It may run down to 60 square feet. Where there are 140 sprinkler heads on a floor a 5-inch connection is required. Where there are 200 heads on a floor it requires a 6-inch connection.

These points are so well established by fire insurance interests that it does not seem that they can be disputed.

Private fire service is a proper function of a water works system. It is installed solely to put out fires, and generally speaking should be used only for that purpose. That fires are put out with private appliances, especially automatic sprinklers, with the use of less water than when public hose streams are used, is a well known fact. Statistics of the National Fire Protection Association covering twenty years and 16,680 fires show that the average fire in sprinklered buildings is put out with 6.8 sprinklers. Assuming that each sprinkler delivers 15 gallons, which is believed to be a fair average, the amount of water discharged is 102 gallons per minute. A single standard hose stream delivers 250 gallons per minute.

These statistics are taken from the last annual report of the National Fire Protection Association published this year, and cover the experience of twenty years. They are correct except for the fact that there are a few fires which run over 100 heads per fire, where the data were not given accurately enough.

Now coming to the question as to how long a sprinkler system operates and how long a hose stream operates, it would be a difficult proposition to fix definitely; you will all agree that a sprinkler system is not in operation very much longer than a hose stream in the event of fire, and that the chances are that there will be more than one hose stream used. It is clear that the amount of water used is certainly much less than where hose streams are used.

MR. DOW R. GWINN: The speaker's relations with the insurance people have been of a most pleasant character. Mr. Blauvelt understands the business thoroughly, and is very fair indeed, and very willing to listen to the viewpoint of the other fellow.

At Terre Haute we have put the private fire protection problem behind us; it no longer bothers us. Every water works man here should prepare a list of rules covering private fire protection and have them adopted by the proper parties; Terre Haute has a whole page in its book of rules covering private fire protection, as to how it will be furnished, etc. This has been approved by the Public Service Commission of Indiana; so that if a man comes in and wants a connection from the water works for private fire protection, sprinklers, or otherwise, he is referred to the rules.

It is not the function of water works departments or companies

to furnish private fire protection. The functions of a water department or company is to furnish water for public fire protection, and for the use of the citizens. The matter of private fire protection is a matter of contract as between the person wanting that special protection and the company; and the company or department is in the position to specify what those conditions are.

At Terre Haute we furnish service up to the curb free of charge, specifying the size of the service. The rules do not say that there shall not be anything larger than four inches, but that is our policy. We furnish a detector meter at the property line or on the sidewalk. We charge the company or person desiring the service a minimum rate. Our Public Service Commission in passing upon that have specified a double minimum; that is, where the minimum rate for the ordinary 3 inch meter, say, is \$3.75 a month, they specify that the minimum rate for a meter in the case of private fire protection shall be \$7.50. With a 4-inch meter the ordinary minimum rate is \$10, in the case of private fire protection it is \$20, for the reason that private fire protection is a valuable service, and that the person receiving the service should pay a fair price for it. We do not furnish private fire service unless the chief of the Fire Department gives his permission; in other words, the water company does not desire to assume all the responsibility of furnishing private fire protection. We put it up to the chief of the Fire Department and let him say whether in his opinion it will be satisfactory to have a large connection to our mains.

We have provision against other sources of supply being connected with our mains. On account of the awful experience in several cases we do not care to take the chance of polluting the public water supply by having it connected with a polluted supply.

Then we have a rule covering guarantees; for instance, the company in no manner guarantees to furnish the proper quantity of water through private fire protection service, nor does it undertake to guarantee anything relative to such service, etc. Our rules go into the matter very thoroughly.

MR. IRA G. HOAGLAND: The speaker will point out answers to some of the questions concerning private fire services which are to be found in the proceedings of former meetings of this association, in addition to the few statements he would like to make.

Good answers to the question "Is a private fire service one of the

proper functions of a water works, the same as the public hydrants" are found in what Halford Erickson said in his address, "Rates and Rate Making Under the Wisconsin Public Utility Law", at the 1913 meeting.

In the first part of the address he said: "In many cases the furnishing of water for fire protection is the most important of the two general purposes for which water-supply systems exist". (See p. 52, PROCEEDINGS, 1913).

Mr. Erickson maintained that sprinkler systems or private hydrants "supply a means by which water can more effectively be directed upon a fire at some given point", thereby improving a city's facilities for attacking fire and benefiting whole communities, not particular individuals. (See second paragraph, p. 61, 1913 PROCEEDINGS.)

The reduction of the community's fire risk by private fire service was remarked by Walter Edward Miller, an engineer of the Wisconsin Railroad Commission, in the discussion on experiences with private fire services at the 1912 meeting. (See second paragraph, 375, 1912 PROCEEDINGS.) He described the effect of the operation of automatic sprinklers and said: "It seems fair to assume that the community derives a decided benefit from their existence, through their quick action and consequent reduction of fire loss, both in property and business, and perhaps human life."

"While this class of service has a greater or lesser value to the property owner, it is equally clear that it has some value to the water utility, and to the public in general", said Mr. Miller in his address "Charges for Public Water Service to Private Fire Protection Systems", at the 1913 meeting. (See second paragraph, p. 122, 1913 PROCEEDINGS.)

Mr. Miller pointed out that a water utility should be interested in the prosperity of its patrons, which means the prevention of destruction of industries by fire. When industries are burned the employment of workers, many of them patrons of a utility, is interrupted. He said that the community should be interested "in the preservation and prosperity of its industries, the continued employment of its people and in the protection of property and human life," also "in the cost of carrying fire insurance." Because of the effect of fire losses on insurance rates generally, Mr. Miller held that "the public as well as the individual property owner is financially interested in the installation of better fire protection facilities in the establishments of large value".

To emphasize the fact that the private fire service is not an individual but a community proposition, Mr. Miller remarked the plan of requiring, by municipal ordinances, the protection of certain classes of property by automatic sprinkler systems. This is done in Chicago. He said that this is in the interest of public safety and the time is coming when all of our leading cities will have such requirements in force. "The enactment of ordinances imposing upon property owners a duty of providing expensive private fire apparatus carries with it a moral obligation on the part of the city to furnish water to that apparatus instead of withholding it for use only through city hydrants and fire department service," declared Mr. Miller. (See first paragraph, p. 123, 1913 PROCEEDINGS.)

Continuing he made the following assertions:

Most private fire services are supplied "either entirely without special charge or at a very small charge."

No need of charging for private fire services when there is sufficient income from the public hydrant service furnished.

In commenting on the actual cost of supplying water to private fire services, which Mr. Miller said is very little, he reviewed the economic effect of automatic sprinkler systems, and said: "The furnishing of private fire protection effects a direct saving to the utility from the cost of furnishing only public fire protection service."

A superintendent of a water works says this: "Any legitimate effort to diminish fires should be fostered, particularly by municipally owned plants where the stockholders and the patrons are practically the same parties."

James R. Young, Insurance Commissioner, Raleigh, North Carolina, says: "Some time ago Raleigh, and since that other cities, decided to furnish free water for private fire protection, such as private hydrants, standpipes and automatic sprinklers. Still the good work goes on, and will no doubt continue until every city or town in the state owning its water works will take the same course. This will no doubt be followed in time with a requirement that every business building in the fire district shall be equipped with automatic sprinklers, and this would richly pay the city as well as the owner of the property, not only in the safety from fires, but in greatly reduced fire insurance rates. The cost of putting in an equipment of standpipe or piping is very small to the property owner, and the loss to the city is practically nothing, as no water is used except in case of



a fire, and then much less than would be used by the fire department in putting out a fire."

Private fire protection should not be confined to any one class but should be extended to all classes, in common justice to the community as it has contributed to the establishment of the water utility, and private fire services modify the demands on the utility and thereby favor economical maintenance.

In view of the fact that the average loss per fire in sprinklered properties is 99 per cent less than it is in unsprinklered properties, it is easy to conjecture how beneficial sprinkler protection would be in business buildings, hotels, schools and other non-industrial classes, the fire waste in which is really fearful.

As to the size of service allowed and proportion to size of mains, in his address "Private Fire Protection Service Charges", at the 1913 meeting, Leonard Metcalf remarked the insignificance of the risk from broken private fire service connections and advised against arbitrarily limiting the size of them. (See pps. 131 and 132, 1913 PROCEEDINGS.)

Of 314 replies to a question asked water works men concerning the maximum diameter of private fire service connections, Mr. Metcalf said that 79 per cent specified a maximum, and, of those that did, 76 per cent specified a maximum size of 6 to 12 inches. (See p. 143, 1913 PROCEEDINGS.)

For answer to the question: Are the demands of the insurance people for large fire services reasonable, and is it good water works practice to allow them? (See p. 141, 1913 PROCEEDINGS. Control of Large Private Fire Services.)

In discussing the subject "Direct Connection from City Water Mains to Sprinkler Systems and Standpipes", at the Fortieth Annual Convention of the International Association of Fire Engineers in Denver, Colorado, September 17-20, 1912, F. A. Raymond, an engineer of the National Board of Fire Underwriters, spoke of different arrangements of controlling valves, particularly electrically operated valves controlled from remote points. What Mr. Raymond said is printed in the proceedings of that convention and water works men will find it interesting reading.

Regarding joint connections to other source of supply, the hazard of water contamination in connecting the public water service with other sources of supply to sprinkler systems can be eliminated by using special forms of double check valves, which have been tried out and found reliable.

There would seem to be no more reason for metering private fire services than there would be for metering connections to public hydrants, as water used in extinguishing fires is not charged for. However, there may be need sometimes for some simple form of detecting device in connections to private systems of underground piping, where there are possibilities that water may be taken for other than fire purposes. The by-pass meter used in Seattle, Washington, is a practical and inexpensive detector meter. But there does not seem to be any need of detecting devices in connections from water mains that go direct to sprinkler systems inside buildings, as the alarm valve in the sprinkler system is in itself a sufficient detecting device. In the discussion on private fire protection at the 1913 meeting A. A. Reimer told of his acceptance of this arrangement and described its effect. (See p. 180, 1913 PROCEEDINGS.) The water department in Washington, D. C., came to the conclusion that the cost of the installation of expensive detector meters was out of all proportion to the actual service performed by the meters and abolished the requirement for them, and now installs the simplest form of small by-pass meter. Different methods of guarding against surreptitious use of water from private fire services were described by Leonard Metcalf at the 1913 meeting, (See pps. 133 and 150, 1913 PROCEEDINGS.) and he suggested that this association be guarded in advocating expensive detector meters, for in a small plant the burden of the installation may defeat the introduction of much desired fire protection service. At the 1911 meeting of the association J. N. Chester said that the complete isolation of sprinkler systems from any use other than that for which they are established and the sealing of all valves in them largely obviates the necessity for any meter in a sprinkler system connection.

A tax paying property owner is entitled to public fire protection. If he puts in a sprinkler system which will control fire with much less water than would be used by the fire department, it does not seem fair to make him pay the community for doing this. Rather it would appear that the community ought to pay him for the improvement. "The speaker's view is that the service furnished to automatic sprinkler systems should be covered by the hydrant rental," said W. E. Miller, at the 1913 meeting. "This is simply allowing the owner of the plant protected by automatic sprinklers an opportunity to make more efficient use of a service which otherwise would be supplied only through hydrant and fire department equipment."

(See second paragraph, p. 186, 1913 PROCEEDINGS.) K. F. Bowman, superintendent of public safety, Bureau of Water and Lighting, Harrisburg, Pennsylvania, says: "We make no charge for water used for sprinkler systems, either in factories or business houses. We feel that the water consumed through a sprinkler is a considerable saving over the water used by a steam engine from plugs for the same purpose. We therefore encourage all factories or large buildings to have a sprinkler system installed, as it is in direct communication with any fire that might occur in that building. For this reason we make no charge for this service."

Leonard Bauer said at the 1912 meeting: "We make no charge for private fire services in Newport, Kentucky, taking the stand that it is not only property that we are protecting but it is human life. It is just as necessary that a municipality should consider the fact that it is protecting human life as it is that it is protecting property; therefore, we furnish water free but they must pay for the installation of the services."

At the 1912 meeting it was reported that Daytona, Florida, made no charge for private fire service. All property is taxed to maintain the fire protection. Fire lines are installed as far as the curb at cost by the city. The water that is used by private fire lines for extinguishing fires would presumably be taken from the city hydrants were there no private fire line. We therefore consider that the private fire line not only costs the city nothing, but that it actually saves expense for the city, the saving resulting from earlier, and therefore better, control of the fire, which results in the use of less water and takes less time from the fire department. The attitude of Daytona is an excellent criterion on this point.

The following extract from an editorial in the Waterbury, Connecticut *Republican*, inspired by several severe fires is interesting, as it shows the effect of onerous charges for sprinkler system connections:

The best lesson to be learned from our recent experience with fires is that it is costly not to build fireproof structures. The next is that although fires can start in fireproof buildings and feed on the contents, they are generally arrested at the start when installing sprinkler systems.

The lack of sprinkler systems is distinctly up to the city and not to the property-owners. This is one of the cities where the property-owner who furnishes his own fire protection has to pay an extra water tax. The water department has a standing charge against sprinkler systems, so much a year for each sprinkler head. A sprinkler head uses no water until there is a fire.

Then it pours on water, until the fire is out, and thereafter until it is discovered and the water turned off.

The city penalizes a sprinkler system almost as though it were continually using water. The reason we have never been able to see. It may have been because the first sprinkler systems were installed by manufacturers and somebody was afraid the manufacturer would get something for nothing unless he were taxed on his sprinklers. Of course, the rate once having been established, it is difficult to remove it, because it brings in a certain amount of revenue and the city needs the money and does not like to cut off any revenue.

So we jog along. The building which has a sprinkler system takes care of its own fires. The building which has no sprinkler system has a little cellar blaze which not being promptly discovered, grows into a big fire. Then the city sends an expensive fire department to pour half a million gallons of water on the blaze and does not charge anybody a cent for it. Water is supplied through a dozen lines of fire hose at high pressure and without charge. When it is supplied through a small hole in a sprinkler head it costs money, and the money has to be paid whether it is used or not.

This discouraging of automatic fire protection is penny wise and pound foolish and ought to be stopped. The city ought to take off the sprinkler head tax and then compel the owner of every important building to sprinkle his buildings, or at all events his cellar.

MR. W. S. CRAMER: Two speakers have made the assertion that there is less water used in the automatic sprinkler system than in a fire fought by a hose stream. Was that true in the Salem fire in the year 1914? Is it not true that there was an entire failure of the water supply there due to the breaking off of an 8-inch and two 6-inch sprinkler connections in the earliest stages of the fire?

MR. IRA GOULD HOAGLAND: Absolutely no. The reason was that sprinklers were not in the building where the fire started. The breaking of sprinkler system connections did not occur until several hours after the fire started. If you will read the records you will find that they are very clear, and you can easily determine the facts. Full reports of the circumstances of the Salem fire were published by the National Fire Protection Association, Boston, and the National Automatic Sprinkler Association, New York.

MR. W. S. CRAMER: The speaker has as his authority the report of Mr. Frank McInnis of the Boston Water Department and Mr. Clarence Goldsmith of the Boston High Pressure System published September 19, 1914, in the *Engineering Record*. In this report the blame for the extent of the Salem fire is placed on the failure of

the sprinkler connections and every water works official should read this report.

MR. GORHAM DANA: In regard to the Salem fire, the pressure had decreased in the city mains very materially in the early stages of the fire; but as Mr. Hoagland says there were no sprinklers in the building where the fire started, and it was some little time before the fire reached a building where there were sprinklers. The National Board of Fire Underwriters made a test after the fire to learn what was the effect of broken sprinkler mains on the water supply. There were sprinkler mains broken after the fire started, and they made a test with those particular mains open and also closed, and found that the difference was almost unappreciable. The small domestic connections, a great many small ones, not a few large ones, were what really made the trouble.

MR. C. B. SALMON: There is a vast distinction between a municipal plant and a privately owned plant as to the effect of these connections. In a private water works system a large manufacturing plant may locate at a point where they can get side track privileges or in some outlying part of the town where land is cheap and, the district being unsettled, the water mains are not over 6 inch, and they ask you to make a 6-inch connection for a sprinkler service inside their factory which would take all the supply of that water main in case of a fire and leave the balance of the district without water.

If you decline to attach so large an opening they complain to the council that they cannot get fire protection. In the case of a municipal water works they usually work the council through political influence and secure it. The principle in either case is wrong and an injustice upon the public for the reason that their only motive is to save money on their insurance. Why should the public be asked to pay a part of their insurance? Even if the water mains are larger than 6-inch it is dangerous to permit larger than a 4-inch opening from any one street main, as in case of falling walls or floors the interior pipes of a sprinkling system are opened and generally broken off so that the entire capacity of a 4-inch opening is being drawn, and would endanger all the adjoining risks by reducing the fire pressure on the connecting mains.

MR. W. Z. SMITH: As to the function of a water company to furnish private fire protection, it seems that there is no obligation on the part of a water works, whether it be a municipal plant or private company, to furnish private fire protection. The insurance people themselves have already answered that question in that they do not make a general reduction of insurance rates to the city by reason of the fact that a few of the property owners have installed private fire protection. They do not even allow a reduction of rate to the immediately adjoining property. The property directly benefited by private fire protection enjoys all the benefits of the reduced insurance rate; and probably not 1 per cent of the people who now have private fire protection would have installed it had they not been able to get that very favorable reduction in cost.

Why should a municipality or a private water company furnish a valuable service without charge? Why should they be required to lay larger supply mains in the streets to provide this additional protection to private property and be put to that expense without some remuneration therefor? If the entire city received financial benefits in the way of reduced rates by reason of having private fire protection to certain properties, then there would be some reason to say that there was an obligation; but inasmuch as they do not, why should not the man who is receiving the benefit pay for it?

As to the relation between a private fire service and a public hydrant, the speaker cannot see that there is any relation at all between a public fire hydrant that is installed and maintained at the expense of a water company and that of a 4-inch or 6-inch or 8-inch main that goes into somebody's property and protects only that property from immediate damage. The one is a valuable service, enjoyed more by the party immediately protected than by any one else, while the other is a service protecting all alike. If that were not the case the general question of reduced insurance premiums would affect the entire block instead of only the property protected.

Referring to the statement made by one of the speakers, that "sprinklers often go off and by putting out a fire before it gets a headway thereby protect adjoining property", in one particular instance a sprinkler head did go off and put out a fire before it could spread to any other part of the building, and it was not even necessary for the fire company to connect up with the plug when they reached the fire. In another case where there were two 4-inch connections going into the building the fire did gain headway, the

building was destroyed, the walls collapsed, both services were broken off at the property line, and the final result was the destruction of the entire block of property by fire.

MR. LAWRENCE DAW: In our rating of cities, in arriving at a base rate, the conflagration hazard and structural conditions of the city have always been considered, and usually amount to about 8 per cent of the total rate. In that conflagration hazard is included the number of sprinklered buildings and the manner in which they act as cutoffs. In other words, the conflagration hazard is mitigated by these sprinklered risks, and they are included in that way as a general reduction of the hazard charge in the basis rating of the whole city.

The speaker would like to answer another question that Mr. Smith brought out, that nobody except the owner gains any benefit by the installation of sprinklers, that the neighboring rates are not reduced. He may be correct in that they are not reduced, but only in a technical way. On any adjoining or neighboring buildings a charge is made for the exposure risk. Take an ordinary mercantile block, if there is a sprinklered building between two others we make a nominal charge on the exposed unsprinklered mercantile building for the presence of that sprinklered risk, whereas under ordinary conditions that charge would run anywhere from twenty-five to fifty cents per hundred where the central building is not sprinklered.

Now Mr. Smith raised one other point, with reference to providing extra sized mains for a private fire protection service or sprinklers. We find in hydraulic tests of a large number of cities and towns that, if the mains originally laid are of sufficient size to provide for proper outside hydrant fire protection, with a proper additional allowance for taking off ordinary service connections, there is no difficulty in getting water enough to provide for automatic sprinkler connections.

MR. GORHAM DANA: The speaker would like to answer one other point that Mr. Smith brought up, of the isolated case where two 4-inch connections were broken. That is an exceptional case. You will admit that it is not very often that two 4-inch connections in a sprinkler system are broken. Statistics show that the average number of sprinklers opened on a fire is less than seven. It is not

very likely that where all the sprinkler heads are open there is much breaking of pipes. While there may be found cases going to one extreme, there are also cases going to the other extreme where only one sprinkler is opened and where the flow of water is very small. In neither case is there any argument furnished against the general proposition.

Another point is the relation between public and private hydrants. It would seem that a sprinkler system or private hydrant system is simply an extension of the public mains to do a service more efficiently than if done in any other manner. That is, when you have a fire and use the public hydrants you use a large number of hose streams and a large amount of water to put out the fire. When you have a sprinkler system you get the same effect with the expenditure of much less water. Is it not a benefit to the community, and also to the water company, to extinguish the fire with less water than would be necessary otherwise? Both the sprinkler system and the public hydrant system are put in to accomplish the same purpose, and there is no more reason for a charge for private fire protection, that is rental, than for public hydrants. There is a reason for charging for the cost of installation; but so far as rental is concerned, the speaker sees no difference between a sprinkler and a public hydrant system. You certainly would not charge a man for public hydrant protection; and if he puts in sprinklers at a considerable cost to himself so that the fire is extinguished with less water, why should he be taxed for so doing?

Of course the argument is made that he makes a saving in insurance. That is very true, but that is entirely up to him. He has to make an investment; it costs him a lot of money to put in that sprinkler equipment. If he were to put that same money into another investment he could make perhaps 10 per cent return. Why should the water company tax him for so doing, especially in view of the fact that it is a benefit to the community in that less water will be required if a fire does come?

MR. W. Z. SMITH: Is it not a fact that where hydrants are placed inside of private property you allow a better rate than you do for hydrants on the street immediately in front of that property?

MR. GORHAM DANA: Not if the building is properly protected with public hydrants. You cannot protect a large mill property



with hydrants on the street; you cannot get the hydrants near enough; but if the hydrants are within a proper distance from the building the rate is the same, whether they are public or private.

MR. PATRICK GEAR: At Holyoke there is a 6-inch connection, taken off an 8-inch pipe in a street, into a building that is sprinklered. The insurance people demand another connection into that building. The owner of the building came to see about it, and was told that there was a 12-inch pipe in the other street, and if he would take his connection off of that pipe his building would be always protected, because those two streets would never be both shut out at the same time. That was satisfactory to him, but the insurance men inspected it and decided that it wasn't the thing to do.

MR. LYMAN P. HAPGOOD: The speaker holds no brief for the National Board of Fire Underwriters, but would like to say as a matter of fair play that in Jamestown we have had quite a lot of dealings with the National Board, and so far have never had any trouble; and further than that, we have acted together, that is the water department and the representatives of the National Board of Fire Underwriters have met half way, and as the result the city has recently received a reduction in its insurance rates.

MR. D. R. GWINN: In reply to the question asked by the representative of the insurance interests as to why a charge should be made for private fire services, it seems to the speaker that it resolves itself down to readiness to serve. The ordinary house is supplied with a  $\frac{5}{8}$  or  $\frac{3}{4}$ -inch supply pipe; but when a man wants private fire protection he must have something a great deal larger than that. If he is charged the minimum rate of 60 cents on the basis of a  $\frac{5}{8}$ -inch service pipe, then he should pay a minimum rate in proportion to the amount of water that he can draw from the mains; because the works in the case of a direct pressure plant must provide pumps, filters, settling basins, and mains large enough to take care of this service. Now the department or company that supplies such special service should be paid in proportion to what an ordinary householder pays for the ordinary service pipe. Private fire protection is a valuable service and should be paid for, there is no doubt about that.

Then upon the question as to the difference between the public hydrant and the automatic sprinkler pipe, the conditions are en-

tirely different. A 6-inch line running up to the curb line and out of the way of traffic is a perfectly safe proposition from a water works standpoint; but when you run a 6-inch or 4-inch pipe into a three or six story building, and have a number of stand pipes running from it that are liable to be broken off in case the sprinklers do not put out the fire, then that is a different proposition entirely. We have had in our own city one large factory burn because the automatic sprinkler did not extinguish the fire, and a 6-inch connection was broken off. Some one may say, "Why didn't you shut off the valve?" The reason was that the wall fell outwardly and covered the valve, and in the meantime the pressure dropped from the ordinary fire pressure down to such a low point that it was practically useless for fire service. If at that time a serious fire had broken out in the business district we would have had a conflagration. There is no doubt about it. It would have been an impossibility to have furnished proper fire protection.

The speaker believes the time will come when the insurance people will say, "Do not allow a 6-inch connection made with your mains, because there is more necessity for maintaining general fire protection than the fire protection of a single building." The automatic sprinkler is a special privilege for those who can afford to pay for it. The man who has to depend on a small hose does not get the same benefit that the sprinklered factory man does; and when the latter gets that privilege he should pay for it liberally; and the water department should be provided with all kinds of protection in the way of valves, meters, and all that sort of thing.

**MR. ALBERT BLAUVELT:** The speaker has noticed in this discussion that there have been a considerable number of allusions made to a point that is not at all covered by this question, and that is the amount of water that is used at the time of the fire. Is that pertinent to this discussion and do water works men usually take that matter into consideration at all, do they consider it worth while?

**MR. DOW-R. GWINN:** The amount of water used for extinguishing fires is such a small quantity that it is hardly worth taking into consideration. The main thing is in being ready to serve water. In Terre Haute a record is kept of all the fire alarms and the increased consumption during the time that the fire pressure is on.

It is a very small portion of the time, and represents a very small portion of the amount of water actually used. It is the being ready to serve the water that costs the money; it is not the water itself.

MR. HENRY P. BOHMANN: The statement was made by one of the speakers that the average number of sprinkler heads that went off is less than seven. The speaker is very much interested to know what the maximum number was if he can get that information, and what size pipe would be required to furnish the necessary water for the maximum number.

MR. GORHAM DANA: In reply to the last question the speaker would state that he mentioned that there was no way of tabulating the figures exactly, but that the National Sprinkler rules, based on forty years' experience and numerous tests, require a 4-inch pipe to feed 80 sprinkler heads on a floor, a 5-inch pipe to feed 140 sprinkler heads on a floor, and a 6-inch pipe for 200 sprinkler heads on a floor; and certainly there is no case where a 6-inch pipe would not have fed that number properly.

One point in regard to Mr. Gwinn's argument that being ready to serve is what you pay for, the speaker submits that if you give them public hydrant protection it is going to cost you just as much to be ready to serve that as it is to be ready to give them sprinkler service which will be ready to put out fires with less water.

MR. NICHOLAS S. HILL, JR.: Antecedent to a proper appreciation of a fair charge for fire service, it is necessary clearly and definitely to understand the principles involved in the cost of service and the elements which are included in that cost.

Every water company, in fact every public service company, supplying similar service finds its service divided into three classes. There are demand or capacity costs; that is, those costs which do not vary with the quantity of the commodity furnished, but which vary more nearly with the demand which a consumer may make, or, as Mr. Gwinn has put it, the "readiness to serve".

Every water works plant has an average daily load. If the plant could be designed for an average daily load and for that only, then the investment in it would be much smaller than it must be to meet the demand which the company has contracted to supply at the peak load, or, for example, when it makes a connection for a pri-

vate fire service. These capacity or demand costs may be summed up under the generic term of "readiness to serve", but these costs are separate and distinct costs, and may be shown by analysis to be separate and distinct from those costs which vary in proportion to the quantity of the commodity served, as well as from the service cost.

The service or customer costs pertain entirely to the individual consumer, such as collecting bills, repairing meters and services, and all that service which is incident to the customer and which would not exist if there were no customers on the system. The capacity and service costs may be termed static costs since they do not vary with the quantity of water consumed. Finally, we have the output or production costs which vary with the output of the product and which depend entirely upon the quantity of the commodity consumed, and since these costs vary in proportion to the output, they may be termed the kinetic costs.

Now, so far as fire service costs are concerned, they are almost exclusively static costs, or readiness to serve costs. The proposition of fire service charges, therefore, seems no different from that in any other system of charges. Now, it is undoubtedly true that it is not the water taker necessarily who benefits by the fire service, but it is the taxpayer, and the fire service costs should be paid from the tax levy since property as a whole throughout the city benefits by fire service whether the individual is a water taker or not.

Now, we come to the point of special service. In addition to the general fire service furnished from the tax levy, John Smith desires something more for his own protection, just as an individual may desire to pay a special watchman. He is not satisfied with the public fire service supplied by the city and paid for through taxation. He finds that by providing additional fire service his insurance is lowered and, therefore, he effects an economy by increasing his fire protection beyond the point to which the taxpayers in general may be reasonably assessed. John does not furnish this additional fire protection for himself from philanthropic motives, for the purpose of protecting his neighbor, or some other property. Now, under these conditions, the individual who requires the special service should be willing to pay for that special service, as much as the man who wants additional police protection is willing to pay for a special watchman, or the man who steps into a Pullman and is not willing to ride in an ordinary seat pays extra fare for the drawing room or any special privilege which he enjoys.

It seems a tremendous fallacy to talk about individual fire service being for the benefit of the community. Of course, individual fire service is a benefit to the community as it reduces a particular hazard. So is the special watchman a benefit to the general community because he increases the difficulties of the highwayman, but you may as well say that a man who builds a large hotel and helps the community generally by so doing should have his electric and water service free because he helps the community. You could put up a dozen arguments of a similar kind, and the whole question would resolve itself into one of paternalism under which the taxpayers would supply everybody free who helped anybody else in order to help the community along.

Now, if you will bear these basic principles in mind, the whole question will simplify itself in the minds of everybody. Remember the fact that there are two distinct kinds of service: the proportional service, which varies with the quantity of water supplied, and for which a man should pay according to the amount of the commodity supplied. In addition there is the static service which includes the customer or service cost and the capacity and demand cost, where a man may not use water three months out of the year but would like to have it there if he wants to use it all the year or whenever he pleases, whether it be 1,000,000 or 10,000,000 gallons a day and the company contracts to give him that water on demand. Extra piping and larger pumping engines and other equipment are required to meet this demand cost which, as explained, is a static cost and has no relation to the quantity of water pumped. In the case of the individual it is a special service in addition to that furnished him through the general assessment upon his property.

MR. W. E. MILLER: The courts have had occasion to pass on this question of rates for private fire protection services. They have held the opinion that it is a valuable service, and that the water department or water company furnishing it is entitled to compensation for the service rendered; but any one who gets into the questions of analyses of expenses and determinations of rates, for all consumers of all classes, is up against the question of determining how much of these expenses are properly chargeable to the special fire protection service.

It is difficult to see a logical basis upon which the static or fixed charges can be subdivided between the hydrant, or general fire pro-

tection service, and the special fire protection service; because the hydrant service, if adequate, requires fully as large an investment before taking on private fire protection service as it does afterwards, assuming that the property owner getting the privilege of fire protection service pays for the connection in from the mains. If the static charges of the water works are covered in the rates for hydrant and general commercial service, there is no part of that that can properly be included in the charge for the special fire protection service.

Going to the output expenses or proportional costs, there is less of an element to be included in the charge for private fire protection service than would be involved in taking care of fires in the same premises through the ordinary means, that is, hose streams. So it seems, to get down to the question of the consumer costs, a charge that will cover the expense of inspection and general overseeing of this private fire protection service, where inspection is necessitated by the absence of meters. There should be some charge, but it seems that it must in general be limited to a share of the consumer expense.

MR. WIRT J. WILLS: If the inspection of private fire services alone entails a salary cost to the department of \$2500 a year, what rate would be right for the fire protection charge, how much over the actual salary paid for the inspection given? You admitted that there ought to be some charge for the inspection, did you not?

MR. W. E. MILLER: Yes, where the service is not metered and inspection is necessary.

MR. WIRT J. WILLS: If \$2500 has been expended for salary alone in the inspection of private fire services, how much in excess of that do you think the water department ought to get back? Do you think that they ought only get \$2500, or do you think, they should get more? What do you think is a fair return?

MR. W. E. MILLER: They ought to get the full cost of inspection.

MR. WIRT J. WILLS: Only that?

MR. W. E. MILLER: As a minimum. There would probably be some additional charges, properly assessable against that service.

MR. WIRT J. WILLS: Don't you think there ought to be something more than the actual cold cash salary of the man who did that work and nothing else?

MR. W. E. MILLER: Oh, yes, the plant is entitled to collect from its patrons the total of its proper costs of furnishing all service rendered, including depreciation and a fair return on the value of the property.

MR. CHESTER R. MCFARLAND: The charge for this service is not a thing that can be worked out by any fixed rule of thumb. Each property owner must pay the charge proper for him to pay, depending on the conditions surrounding the operation of the plant. In the first place, the general community may be receiving this special fire protection for practically nothing, because the fire hazard is covered by the annual charge for fire hydrant rental, which is sufficient to pay a return on the increased investment necessary to provide a plant large enough to take care of the requirements for public fire hydrants and private connections for fire purposes; but if this is not provided for in fire hydrant rentals or charges, then the man that gets special service to provide against a special hazard, should pay for this service a reasonable part of the return on the increased investment necessary to provide him with this extra service; this charge to be in excess of the regular tax levy which is supposed to cover the fixed or static charges, but if the tax levy is sufficient to take care of the entire investment for fire hazard, then he has therein borne his proportion of the charges by the taxes assessed on his valuation and should therefore not be compelled to pay any additional charge.

MR. H. F. DUNHAM: From the viewpoint of the city the hydrant service and the special fire service cannot be the same. The hydrant service is provided and maintained for the entire community or the city at large and whether such service is contracted or not the responsibility for maintaining it intact rests chiefly with the city. Special fire service is primarily for the benefit of some individual or company and often imposes extra risks of failure of the general service at points far away as well as near by. The hydrant service is from a distribution system laid in the streets and properly safe-guarded. The special fire service is on private ground

where no one can tell what may happen. "Special service" piles have been driven through such private supply mains in one part of a city while the general obligation to maintain fire pressure remained in full force.

No one can read the report on the Salem fire in the *Journal of Engineering News* without getting a good idea of what happened there. Similar conditions and results have been noted time and again. It is beside the mark to say what would or would not occur if more buildings were supplied with automatic extinguishers. We know the chance of failure of distribution systems must be increased by such special connections, and it is reasonable to hold that the risk shall be no greater than is required by good practice. The uses are unlike; troublesome adjustments cannot be avoided.

MR. IRA GOULD HOAGLAND: There seems to be a tendency in this matter to exaggerate the so-called sprinkler failures, which is not borne out by facts.

MR. W. Z. SMITH: Can a municipality confine its fire service equipment to factories or commercial houses only, if any other property owners should make application for such service? In that case could not the point be raised very reasonably that you were discriminating between property owners who all paid alike their proportion of the taxes?

MR. C. B. SALMON: At least five public service commissions have decided that there can be no discrimination in either rate or service as between different like classes of service. If a city or private water works establish a rule that they will give factories and commercial houses the privilege of large fire pipe connections for the purpose of reducing fire insurance to those properties; then any hotel, school house, hospital, boarding house, or large store or dwelling, may ask for the same service and demand such a connection upon complying with the rules governing such service. If these large connections were quite generally used in a congested district and a conflagration got under way in that district the water would have to be shut off of those blocks or the fire pressure could not be sustained and the fire would spread still farther. The question is one of private profit, and should be paid by the party benefited, and such a charge made as would not make it profitable for smaller



properties to demand it. If special fire service or sprinkler service is not charged to the property benefited, but paid for by the city, the general fire service will be endangered by too many such attachments.

PRESIDENT HILL: Did you say that five public service commissions have passed upon this question?

MR. C. B. SALMON: The public service commissions of Wisconsin, Indiana, Missouri, Idaho, Oklahoma and California rule that no such discrimination will be allowed.

MR. LAWRENCE DAW: The speaker thinks personally as an engineer, that the question of the size of a branch fire service is one simply of hydraulics; that it all depends upon the available head and the allowable friction loss that you have in getting the water into the building, after determining the amount of water which will be necessary for the operation of the equipment. You have to provide proper sized pipe for the quantity of water; and the size of any one pipe must be such as not to endanger crippling the outside equipment, taking into consideration the location of the risk, and the gating of the water system in the vicinity. That may be laid down as a general proposition. You must of necessity reduce the size and provide two or more connections if it will otherwise in case of a break of the service cripple the entire water system. It is difficult to lay down any hard and fast rule as to the size of connections necessary to provide adequate water for the fire service, but you must not cripple the general system, which can be obviated by proper gating of the latter. A 4-inch connection would of course be the least that should be permitted for a sprinkler equipment.

MR. ALBERT BLAUVELT: In connection with these remarks the speaker does not think that the Fire Protection Association is very far off in holding pretty much the same view under the sprinkler rules. Attention has been called to the fact that the sprinkler rules contain an absolute requirement for a 6-inch pipe. The reason that a 6-inch pipe is necessary under the sprinkler rules is because very many sprinkler equipments are supplied which meet what is called the standard, that is, that there shall be two sources of supply; and the typical equipment is one with a gravity tank

and a fire pump, or city water connection. Now gravity tanks do not vary very much in their head. The head sometimes is as low as 15 feet, and sometimes as high as 50 feet; and a 6-inch pipe is necessary to hold down the friction loss from the gravity tank to the sprinkler proper. There is no question that for internal piping purposes a 6-inch provision is very wise. That, however, has no relation to the size of the city connections. The city connection is very frequently of a much higher pressure than the pressure afforded by the gravity tank. You gentlemen do not need to be told that the higher the pressure the greater the volume of water that will be supplied through the pipe, so that the effect will be relatively the same as through a larger pipe on lower pressure. The fact that city pressures are so frequently higher than tank pressures is the reason that the sprinkler rules do not make any positive requirements for anything larger than a 4-inch pipe. That does not say that a 4-inch pipe is adequate in all cases. In some cases a multiplicity of 4-inch connections is undoubtedly advisable. Such cases, however, are not so very frequent. We must bear in mind that a 4-inch connection will take all the service pressure that the water works can possibly furnish in many cases; and as soon as the fire department arrives that is taken away, so that you really come back to dependence upon your gravity tank.

MR. C. W. SCHIEDEL: The speaker has a request for an 8-inch connection off a 10-inch main, and would like advice as to the propriety of granting it. The principal main from the pumping station is only a 12-inch, but the one on the particular street referred to is 10 inches, and the request is for an 8-inch connection off of that. Now what should we really give them; an 8-inch, or how much less? The distance from the main to the building is probably 25 feet.

MR. WILLIAM W. BRUSH: It may be interesting to tell you very briefly the New York practice as to size of connections, etc. We do not allow a cut on a main of a size equal to the diameter of the main, except that we will take a 6-inch branch off a 6-inch main if it is necessary to furnish adequate supply for a building, but in that case we plan later to reinforce the system so that we will have a larger main in that particular street. This rule has worked out satisfactorily.

One of the previous speakers referred to the necessity of having a sufficient amount of capacity to give the volume of water required to control the fire, and a sufficient volume of water to properly supply the building or group of buildings that asks for protection. Our problem is very different from that of a smaller system, because we always have an ample supply of water available at the reservoir, and we have only to consider the question of the main to carry it to the particular point where it may be needed. On a 12-inch main we take off an 8-inch connection. We do not use any 10-inch connections. On an 8-inch we take off a 6-inch connection, or smaller. No answer can be given directly as to the size that can be taken off a 10-inch main on a system supplied by a 12-inch main; it would depend upon the requirements of the individual building or group of buildings that asked for the connection; but in general an 8-inch connection would certainly seem to be a very large one in a system supplied by a 12-inch main.

There has been a great deal of discussion as to whether there should or should not be payment made for service rendered for fire protection. In New York there is no charge made. A meter is placed on the main and the water used is charged for, which results in almost no payment for the connection. It would seem to the speaker that a charge is proper. A private fire protection system is similar to a private watchman, and the city hydrant is similar to the city police force. No community would think of paying for a private watchman for any plant or commercial house; but they would provide police protection to the community at large to the extent that it was considered necessary through the general police force. There is great difficulty in determining what is a reasonable charge to any individual for any private fire service, based upon the cost of furnishing such service. That problem is one that New York City has not yet undertaken to solve, but it will probably have to undertake it in the very near future. Discussions such as we have had at this meeting are certainly helpful to us, and no doubt are helpful to many others who have a similar problem to deal with.

MR. C. W. SCHIEDEL: We charge \$25 for a 6-inch fire protection connection or smaller, but what size pipe should we allow taken off with reference to maintaining safety for the rest of the system, 6-inch or 4-inch?

MR. ANTHONY KEILS: How many openings can be taken off a 6-inch pipe? In Mt. Clemens, Michigan, we connected a 6-inch to a 6-inch running off the main street under a building. There were 174  $\frac{3}{8}$ -inch openings off that. Normally we carry 65 pounds pressure and from that anywhere up to 125 or 150. A fire a short time ago in one of the Hill apartments was entirely extinguished before the fire department got there, and we knew nothing of it at the pumping station at all. So that that would indicate that so far as the size of the main is concerned, it had no effect on the working of the pumps or the amount of water.

MR. LEONARD METCALF: The speaker had not intended to say anything on this question because he had already expressed his opinion at previous meetings of this Association, and of the New England Water Works Association. At the same time it seems well to say a word of caution lest conditions in New York be assumed as applicable to those in small communities. There is good reason for the position which has been taken in New York with its congested conditions, high value district, and a pipe distribution system which is totally different from that which prevails in the ordinary smaller city, or the small towns in this country. After all, the question is one of public policy in which is concerned not only the safety of the individual but of the entire community.

In general, for the smaller communities, it would seem safer to limit the size of the pipe connections to 4 inches or thereabouts; on the other hand, every situation should be met frankly on its merits. To put an 8-inch connection on a system having a 10-inch pipe in front of a lot, with a 12-inch pipe leading from the pumping station, looks like a very dangerous proceeding. Not knowing all the circumstances, because unfamiliar with the system and reservoir connections, or the size of the distribution pipes, in general it would seem a wise rule to multiply the number of connections, rather than to increase the size of the connections.

Now it is conceivable that on a pipe system of a small community you might with far greater safety take a 6-inch pipe or even an 8-inch pipe at the extremity of the system, on the outskirts of the town, at the opposite end of the pipe system from the pumping station, than you could make the same connection in the heart of the community. Why? Simply because you will maintain under those conditions a higher pressure on the rest of the system than

you would if it were taken in the center of the town. The volume of water, if more than that which could be safely supplied by a 4-inch pipe needed in the case mentioned, can be gotten probably by an additional 4-inch connection from another main. It is certainly safer from the community point of view to have two 4-inch connections coming from different mains than it is to have one 6-inch connection or one 8-inch connection from a main pipe line. While that may involve somewhat greater cost to the insured, it seems to be a cost which the community may well demand shall be incurred in order to make the position of the community a somewhat safer one.

MR. GORHAM DANA: One point that might be brought up to advantage is the variety of conditions in different places; if you have a 6-inch pipe going into a congested district, where there is no chance for outside valves being put within a safe distance, you have a much more dangerous proposition, from a water works' standpoint, than where you have a large yard system where there can be outside valves placed at points accessible at all times. For instance, in a yard with a lot of private hydrants and sprinkler connections, with a post valve located at the entrance of the yard 50 feet from any building, a 6-inch connection in that case is safe from that standpoint, while it might not be safe in another; so that it should not be a hard and fast rule to limit the connection to 4 inches in all cases. Another feature worth considering, if you do not provide adequate sprinkler connection and size of pipe, a sprinkler system is liable to fall down when most needed; and then the sprinklers will not control the fire, you will have to use hose streams, and you will bleed your system a good deal more than if you gave the sprinklers the proper sized connection in the first place.

MR. H. F. DUNHAM: Reference has been made to the solution of hydraulic problems as a basis for insurance decisions. Many present will agree with the speaker that such decisions are often without relation to the principles of hydraulics. That is one great source of trouble. It is claimed that a few sprinkler heads will extinguish a fire, but the demand is for connections large enough in many cases to cripple a water supply in the event of breakage.

Concrete illustrations are always being quoted and fill up the journal. A number of factory buildings were supplied with sprin-

klers all on one property that covered an area between two streets nearly half a mile apart. Eight-inch connections were first demanded for the 8-inch protecting system but 6-inch connections were accepted. Near the middle of the property and the connecting system of pipes the conditions were favorable for an 8-inch valve to be kept closed except in some emergency. The installation on either side taken by itself was perfectly satisfactory and "standard" and this was pointed out. But the valve question had to go to headquarters, New York, Chicago, or somewhere, and the order came back "Valve out or no rate reduction" quite regardless of the fact that the risk from two 6-inch connections instead of one had been needlessly imposed upon the city distribution system; upon which contracts and all sprinkler properties had to depend. Arbitrary rather than hydraulic would seem to be the term applied.

MR. NICHOLAS S. HILL, JR.: In that connection, it seems that that is a very good illustration of a capacity charge. Here is a company that has a 12-inch main from the pumping station and a 10-inch distributing main. Some one comes along and makes a request for an 8-inch service pipe. The speaker does not remember the exact ratio between an 8-inch and a 10-inch main, but should say that a 10-inch main is equal to two 8-inch mains, so that such an installation would call for a readiness to serve of 50 per cent of the capacity of the plant. This pipe may run two or three years and never be called into service at all, never bring any revenue; but in order to be ready for it the water department must put in larger pumps, and larger supply mains from the pumping station. The party making that demand can do one of two things; he can lessen the demand by putting in a larger tank, keeping that tank full, and thereby saving the readiness to serve cost to the water works; or if they insist upon an 8-inch connection you can see what the cost involved to the corporation is for supplying the service. The practical solution of it would be to ask the customer if he could not do with a smaller service, and provide a larger tank; because after all, what is wanted is an available supply of water at the initial time of the fire; and a larger tank under those conditions would serve nearly the same purpose.

MR. JOHN H. DERBY:<sup>2</sup> The speaker is employed by property owners to look after their interests relative to fire prevention; and he is

<sup>2</sup>Fire Prevention Engineer, New York City.

brought into contact with both public and private water companies and insurance interests. It is his purpose to serve these interests so that the net result will be equitable to all concerned. A desire to coöperate with the water companies has aided greatly in getting fair rulings for property owners. In this discussion there is one point which is worthy of consideration, that is, that a water company has a mutual interest with the property owner, for the reason that if a city or town is destroyed by a conflagration the water company loses a large part of its income for a considerable time. If a mutual interest is taken by all concerned, an equitable understanding between property owners, insurance companies and water companies can be arrived at.

The subject of metering fire service mains has been one to which the speaker has given some twenty years' thought with the result that he does not consider it fair for a publicly owned water company to require the installation of expensive meters in all cases. Where a connection is taken directly from a street main into a building, there being no yard hydrant system, a channel-seated check valve, having a  $\frac{1}{2}$ -inch meter connected to the channel space, will indicate whether or not the check has lifted from its seat, thereby indicating that water has flowed in the fire service connection. The small meter dials indicate the flow in hours and minutes. By this arrangement the water works will have a positive indication that water has been taken from the fire service connection. These connections should be made with the understanding that no water whatsoever will be used except for fire extinguishing or tests. The tests can be made in the presence of an authorized representative of the water company, and due credit be allowed the property owner for the water used, which would not amount to nearly as much as the flushing of a street hydrant. If the check valve lifts from its seat an alarm is immediately given by means of a water rotary gong and an electric connection, so the property owner cannot make excuses if the small detecting meter shows that water has passed through it. It would be fair to require the property owner to pay the cost of inspection. If this suggestion were universally adopted property owners and water companies would be saved a considerable amount of money and their interests be protected. Of course the cost of the connection from the street main to the inside of the building should be paid by the property owner. In the case of a privately owned water company, they should be reim-

bursed by the city or town, as the case may be, at the same rate that a connection to a hydrant is charged for. As mentioned before the water company has a mutual interest with the property owner to keep property intact.

Some years ago the speaker was assigned to the duty of testing sprinkler systems in the city of Boston. The water department assigned an inspector to go along to see that an undue amount of water was not used. After the tests the valves were resealed. Probably from 100 to 500 gallons of water were used in these tests.

As to the size of street connections, that would seem to depend upon local conditions entirely, and no one standard can be made. It is a matter of common sense to determine what is right. It is the speaker's opinion that no connection smaller than 4 inches should be made for fire service.

MR. W. Z. SMITH: What are the requirements of the insurance people with reference to the pressure and flow test on the wet side of a dry system?

MR. JOHN H. DERBY: In answer to that the speaker does not know that there is any definite requirements on that subject. A dry pipe valve should be tested at least once a year. The amount of water used in ordinary systems runs from 250 to 500 gallons.

About two years before the Edison plant in East Orange, New Jersey, burned the speaker laid out an equipment of automatic sprinklers and necessary water supplies, which would have cost approximately \$50,000. As the buildings were largely of reinforced concrete the Edison people did not consider it advisable to spend the money. In fact, they considered it impossible to have a serious fire. If the true figures were known they would probably show that \$4,000,000 worth of property was destroyed and several thousand employees thrown out of work; some for a long time; others were obliged to move away from Orange as they could not wait until the plant was rebuilt. The East Orange Water Department was a loser by this fire.

This whole question of fire service connections, meters and charges should be solved, not by partisans of either insurance or water works interests, but all interested parties should appoint a committee of intelligent people, not theorists, to draw up some reasonable rules and regulations that would be fair to all concerned.



MR. M. L. WORRELL: This reopens a subject that has been "cussed" and discussed until it has been worn threadbare. In municipally owned plants it may become a live political wire, to be used by the politicians for the supposed benefit of the dear "peepul" either to favor or not to favor the insurance companies and those protected. The writer recognizes many good points in favor of free fire service for private property, i.e., for sprinkler heads and hydrants located on private premises for the protection of same; but it is not his intention to take either side in the controversy that a discussion of the subject is sure to bring about. The object is to tell you how free fire service for private fire protection is provided at Meridian, Mississippi; and in order to do this briefly attention is called to the Meridian rules and regulations for such services.

RULE 43. There shall be no charge for private fire protection where no water is consumed, provided the person, firm or corporation receiving such private fire protection shall comply with the following stipulations for the service, namely;

*First.* A written application therefor shall be filed by the person, firm or corporation to be protected, on a blank form to be furnished by the water department.

*Second.* A meter, to be paid for by the owner or occupant of the premises, shall be installed on each pipe line leading from the street main to the property protected. The meter shall be furnished and set by the water department at net cost for meter, labor and materials used in setting the same. Sole and unconditional control of all fire protection meters shall be vested in the water department of the city of Meridian. The cost of all repairs and renewals shall be paid for by the owner or occupant of the premises protected, but shall be done by the water department at actual cost of labor and materials.

*Third.* No fixtures, except automatic sprinklers, fire hydrants or hose connections for fire use only, shall be connected to fire protection line.

*Fourth.* All water passing through the meter shall be paid for by the owner or occupant at the rates prescribed in these rules and regulations.

*Fifth.* No water service pipe shall be connected to fire protection lines, nor shall any water be used or taken therefrom for any purpose whatever, except for fire protection.

*Sixth.* Any person who shall violate any of the foregoing provisions of this rule, shall, on conviction thereof, before the mayor or police justice, be fined in any sum not exceeding fifty dollars, and shall forfeit the right or privilege of free fire protection granted by this rule, in which event such protection shall be withdrawn and the water turned off.

RULE 44. All persons, firms and corporations now and heretofore enjoying the privilege of private fire protection, who shall fail, neglect or refuse to avail themselves of the privilege or benefits provided for by Rule 43, shall continue to pay therefor at the rates heretofore provided, namely:

For each standard single or double nozzle hydrant \$25 per annum.

For each hose connection smaller than standard, \$10 per annum. But no rate less than \$25 per annum.

For each sprinkler head five cents per annum. No charge however to be less than \$25 per annum.

MERIDIAN, MISS., January . . . , 1916.

*To the City of Meridian Water Department:*

The undersigned hereby makes application for the installation of a system of private fire protection pursuant to Rule 43 for the government of the water department of the city of Meridian as amended by ordinance passed by the council and approved by the mayor on the 15th day of December, 1914, and do hereby agree to abide by the terms and provisions of said rule.

The premises to be supplied with such private fire protection are located as follows:

.....  
 .....

Respectfully submitted,

.....

.....

Approved,

.....

*Superintendent Water Works and Public Property.*

Not one of the private fire protected consumers has applied for "free" private fire protection, yet who can rightly say that this is an unjust rule or regulation?

MR. CLARENCE GOLDSMITH.<sup>3</sup> This question of supplying private fire service equipment is one to which we have given much thought in the past few years, attempting to give fair consideration to all its phases. There is no definite statement on this subject in the National Board's regulations on sprinkler equipments, but a set of rules were drawn up in 1910 by a committee of the National Fire Protective Association. These rules were adopted as standard and, it is believed, offer a reasonable solution of the problem. We do not believe that a limiting of the size of the connection is the best

<sup>3</sup>Engineer, National Board of Fire Underwriters.

course, or even a good course, to pursue, but rather that every reasonable precaution should be taken to ensure proper control of the service in emergency. We have no doubt that in some cases a larger connection is demanded than is required for satisfactory service, and believe that this practice should be severely discouraged.

The rules are as follows:

NATIONAL FIRE PROTECTION ASSOCIATION RULES FOR SIZE  
AND ARRANGEMENT OF SERVICE CONNECTIONS FROM  
PUBLIC WATER SUPPLIES TO PRIVATE FIRE SYSTEMS

CITY RISKS

1. Four-inch service connections to be used for smaller equipment, where this size of pipe will furnish ample water for the equipment.

2. Six-inch connections to be permitted where the size of the equipment requires more water than a 4-inch can deliver.

Where the sprinkler systems can be designed in two or more sections and the arrangement of buildings permits taking connections from different street mains, or from well separated points on the same main, it is better to provide two or more 4-inch connections, each supplying separate and independent sections of the system, where this can be done without unduly increasing the cost or decreasing the efficiency of the sprinkler system.

This reduces the chance of one break causing a serious waste of public water, or an interruption of service to more than one section at a time. Where pressure is high and mains large, 4-inch services will often supply ample water; where pressure is low or mains small, larger services are necessary to bring enough water to give efficient sprinkler protection.

Where in city risks the controlling valves required by Article 3 are favorably located so that they would be accessible and likely to be properly handled in case of fire, 6-inch connections could more freely be permitted.

3. All such service connections to have outside controlling valves in one of the following ways:

a. At the curb line with an indicator post.

b. At the building line with an indicator post set in a recess in the building wall.

c. In a valve pit near the middle of the street, or at the curb if a cover in the street is liable to be obstructed by snow or ice.

d. In bad cases, the connection may be looped back and the indicator post or valve pit set on the opposite curb across the street from the building protected; or the connection may, in some instances, be offset so as to come opposite an adjacent building rather than the one supplied.

e. Frequently the controlling valve can be placed opposite a stair tower or a division wall, where there is the least chance of falling walls making it inaccessible.

f. A hand wheel should be kept on each valve, and valves of the outside screw and yoke type should preferably be used.

Street mains should be so gated that in case of necessity not more than a block length, or a maximum of 500 feet of main will be shut off.

4. All valves on fire services to be plainly marked with the direction to turn to open, size of service and what it controls.

This marking can go on indicator posts where they are provided. Where the valves are in the ground plain signs should be put on adjacent building walls, giving also the distance in feet to the valve. It is probable that some uniform sign in wording and color can be developed for any one city which would be recognized wherever seen. It may further be possible to have a standard adopted for use in all places, thus giving the quickest recognition to such valves.

5. All manufacturing connections above 2-inch to be similarly provided with gates.

6. In cities having a number of buildings protected by sprinklers a small squad of intelligent men should be organized to handle the valves in case of fire under the direction of the chief of the fire department.

This squad could be formed either from the fire or water department, or possibly from both. With the growth of automatic sprinkler equipments it is necessary to have an efficient body of men who will understand the value of sprinklers and the best method of handling them to take charge of these matters at severe fires. The fullest use of private protection requires in cities that valves be cared for by men who especially understand the whole system and who will work in full conjunction with the public department.

It is to be regretted that there is a sentiment based upon more or less friction between the officials of the water works departments and what have been referred to here as "insurance interests", because the aim of both is to furnish the best public protection which it is within their means to provide; and this can only be accomplished by both interests getting together and going over these matters very carefully. The speaker will suggest that the American Water Works Association appoint a committee to act in conjunction with the committee now in existence of the National Fire Protection Association, to go over this question candidly and in detail, and to formulate a set of rules, which are very much needed at the present time.

MR. J. M. DIVEN: That is exactly what we are leading up to, the appointment of a committee. While we have not discussed all these questions in their order, they have all been pretty thoroughly discussed; the speaker offers the following resolution: *Resolved*: that the incoming President, with the sanction of the Executive Committee, appoint a committee to draft rules and regulations for private fire services, with authority to confer with similar committees of other bodies and organizations.

The motion was promptly seconded by several parties in different parts of the hall.

MR. GEORGE HOUSTON: The speaker believes that the American Water Works Association is perfectly able to take care of its own business and does not understand why there is any use of our conferring with any organization outside of ourselves, or why we should hesitate to pass our own resolutions among ourselves.

MR. J. M. DIVEN: In making the motion other water works associations, the New England Association particularly, were considered, not insurance organizations especially.

MR. GEORGE HOUSTON: The speaker would be glad to withdraw his objection and to have the New England Association included.

MR. J. M. DIVEN: The motion was to confer with similar committees, and the maker of the motion believes that the association can safely leave it to the committee what associations or committees should be conferred with.

MR. W. C. HAWLEY: The speaker hopes this motion will prevail. Those of us who are familiar with the discussions that have been had in the past remember that twelve or fifteen years ago the representatives of insurance companies were demanding that which was absolutely unreasonable and unfair. We come up against that still out on the firing line at our homes.

Now these gentlemen who have come in here today have apparently gotten around pretty nearly to our point of view, and we may hope if we can confer with them that ultimately their ideas will get out to their men on the firing line. Perhaps that may help to alter the unreasonable requirements that are demanded by their men outside at the present time. If a committee of this kind can be appointed to confer with these gentlemen we may hope for good results.

MR. A. W. CUDDEBACK: It seems that the mere fact that this question has been so long before the water works associations for solution, and that we have not yet arrived at a definite conclusion of the necessities of the case, points to the desirability of all parties

at interest getting together. The speaker is purely a water works man, and has no particular sympathy with the insurance people; but has found in his dealings with them that there is a very decided change of sentiment from that of some years back; and believes that the time has come when we can all work together.

The question will never be settled by one side alone working independently of the other. The manufacturers are as vitally interested as any of us and should be considered in this conference; and if they have any organization which can be represented, why not include them in any conference committees that may be appointed. There is just as much stubbornness on the part of water works men as there is on the part of insurance men on this matter, and the time has come when we should get together on it. The speaker therefore moves to amend Mr. Diven's motion, to the effect that the committee to be appointed by this Association have power to confer with a committee from the fire insurance people and also a committee representing the manufacturing interests, if such committee is in existence.

The amendment was seconded.

MR. J. M. DIVEN: The amendment is accepted if the seconder of the original motion will consent. There was no intention of limiting the committee, but to leave it to their judgment what other bodies to confer with.

The motion as amended was put and carried.